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10/564,071	06/19/2006	Bert Braune	12406-142US1 P2003,0442 U	7131

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EXAMINER	
EFTEKHARZADEH, ARDESHIR	
ART UNIT	**PAPER NUMBER**
2815	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/564,071	BRAUNE ET AL.	
	Examiner	Art Unit	
	ARDESHIR EFTEKHARZADEH	2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 March 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10,12 and 13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10,12 and 13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1/10/2006 and 03/04/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED OFFICE ACTION

Applicant's Response

(1) Applicant's response of 03/04/2008 cancels claim 11. Claims 1-10 and 12-13 are pending.

Claim Rejections - 35 USC § 103

(2) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

(3) **Claims 1-13** are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen, US Patent Number 5,962,971, henceforth referred to as Chen, in view of Kambe *et al*, US Patent 6,099,798, henceforth referred to as Kambe et al, in further view of Dutta, US Patent Application Publication Number 2003/0047816, henceforth referred to as Dutta.

(4) With respect to claim 1:

Chen in Fig 3 and column 2, lines 46-63 teaches a LED structure which obviously emits light, a form of electromagnetic radiation. Therefore "one primary radiation source" reads on LED structure of fig. 2. Chen in column 2, line 52-54, teaches second resin 4 which previously in column 2, lines discloses that there is a substance There is a fluorescent material capable of changing the length light waves mixed with the second resin 4, which is a thin film. Therefore "luminescence conversion element" reads on the second resin 4. It then teaches in column 2, lines 53-55, a filter layer 7 for filtering out the unnecessary light fluxes. Furthermore in column 3, lines 1-2, Chen teaches that the filter layer 7 is added for preventing leakage of ultra violet rays which may be harmful to the sealing resin (a third resin 51, and also for avoiding the undesired exposure of the human body to ultra violet rays. Hence "spectral subregion of an unwanted radiation" reads on ultra violet rays.

Although Chen teaches a filter element for filtering out the unnecessary and harmful ultra violet rays, it does not teach or disclose the composition of the filter element. Specifically Chen is silent on whether the filter element is made of "plurality of nanoparticles" or not. Kambe et al, however, disclose in Abstract lines 1-4, that nano-scale UV absorbing particles are described that have high UV absorption cross sections while being effectively transparent to visible light. These particles can be used to shield individuals from harmful ultraviolet radiation.. Kambe et al beginning with column 11, line 9, teaches that Blocking out UV light from a protected environment can involve blocking UV light from a natural (i.e., solar) light source or from artificial light sources. Blocking UV light from natural light generally involves production of a window that selectively is transparent for visible light while absorbing UV light. Windows are any surfaces through which light is transmitted, regardless of shape or location. The TiO2, ZnO , ZnO2 and CeO2 particles described above are particularly suitable for this application because of their relative transparency with respect to visible light. The window can be made from an inorganic glass such as a silicon based glass, an organic polymer such as high density polyethylene and polyesters, and the like. The particles can be placed as a coating on the window or the particles can be dispersed within the window material (FIG. 7). A coating can be applied in a variety of ways such as spray coating of a solvent dispersion, spin coating and deposition of a particle stream. Therefore Kambe et al teaches that a coated window or a layer with a substance that contains nano-particles, that have the advantage of being transparent in visible light but to block the ultra violet light. Kambe et al in Fig. 8 incorporates such a substance into the structure of a light source to block harmful ultra-violet rays. Kambe et al in column 11, lines 19-23, teaches a window that can be made from an inorganic glass such as a silicon based glass, an organic polymer such as high density polyethylene and polyesters, and the like. The particles can be placed as a coating on the window or the particles can be dispersed within the window material (FIG. 7). "The matrix material" reads on an organic polymer such as high density polyethylene and polyesters, and the like as taught by Kambe et al.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to build the filter out of a coating on a window where the coating is made of nano-particles, or use an organic polymer in which to disperse the particles, for the purpose of

blocking the harmful ultraviolet rays while providing for a window that is transparent to visible light. Even though, neither Chen nor Kambe et al, appear to have explicitly disclosed a dispersion-enhancing surface coating or a dispersion enhancing surface modification. In addressing this limitation, it is noted that "dispersion-enhancing" coating or modification describes the aforementioned "coating or modification" through what it does and not what it is. That is this is a description by functional language.

Having noted that, Dutta discloses the passivating element which binds to dangling bonds on a surface of the nanoparticles to passivate the surface of the nanoparticles (abstract, paragraph [0015]). Since passivating is a form of modification and since Dutta teaches that the passivated nanoparticles are capable of being suspended in water without substantial agglomeration and substantial precipitation, Dutta is disclosing a dispersion-enhancing surface coating or a dispersion-enhancing surface modification.

It would have been obvious therefore to modify the combined teachings of Chen and Kambe by providing a passivating element which binds to dangling bonds on a surface of the nanoparticles to passivate the surface of the nanoparticles and thus to be capable of performing the function of a dispersion-enhancing surface modification for the purpose of preventing substantial agglomeration and precipitation.

(5) With respect to claim 2:

Regarding claim 2, Chen in column 2, line 60 teaches that the light source emits radiation with the wavelength in the range of ultraviolet rays with 360-380 nm. Therefore "primary radiation" reads on this and since Chen has indicated that this radiation has to be converted to visible using fluorescent material or filtered out, this is also the unwanted radiation.

(6) With respect to claim 3:

Chen in column 2, line 60 teaches that the light source emits radiation with the wavelength in the range of ultraviolet rays with 360-380 nm that is less than 420 nm.

(7) With respect to claim 4:

In column 2, line 46, Chen teaches that the light source is a LED, otherwise known as a Light Emitting Diode. Chen in column 2, line 60 teaches that the light source emits radiation with the wavelength in the range of ultraviolet rays with 360-380 nm. "primary radiation

source" comprising "at least one luminescent diode that in operation emits UV radiation" reads on LED structure taught in Chen.

(8) With respect to claim 5:

Kambe et al, in column 12 lines 16-24 teaches that to design appropriate block for a particular light source, the UV spectrum of the source is first determined. One can then select the UV absorbing particles to adequately absorb the UV light from the source. For use in absorbing UV light from natural sun light or UV components of light from an artificial light source, preferably a coating of UV absorbing particles preferably absorbs greater than about 75 percent and more preferably greater than about 90 percent of the UV light. Therefore the combination of teachings of Chen and Kambe et al will produce a coating that would absorb more than 50% of the "unwanted radiation" and hence, would reduce the unwanted radiation by more than 50%.

(9) With respect to claim 6:

Kambe et al in column 9, lines 51-56, teaches that it is preferable for the sizes of metal oxide particles to be from about 5 nm to 50 nm. This range overlaps with the range of "less than or equal to 25 nm and greater than or equal to 1 nm" and therefore the limitation "nanoparticles" with the average diameter in the claimed range reads on metal oxide particles with the sizes taught in Kambe et al.

(10) With respect to claim 7:

Kambe et al in column 9, lines 51-56, teaches that it is preferable for the sizes of metal oxide particles to be from about 5 nm to 50 nm. This range overlaps with the range of "less than or equal to 25 nm and greater than or equal to 1 nm" and therefore the limitation of "nanoparticles" with the average diameter in the claimed range reads on metal oxide particles with the sizes taught in Kambe et al.

(11) With respect to claim 8:

Chen , in column 2, line 60 teaches that the light source emits radiation with the wavelength in the range of ultraviolet rays with 360-380 nm. One twentieth of this range is 18 nm-19 nm. Kambe et al in column 9, lines 51-56, teaches that it is preferable for the sizes of

metal oxide particles to be from about 5 nm to 50 nm. This range overlaps with the range of 18-19 nm and therefore the limitation "nanoparticles" with average diameter in the claimed range reads on metal oxide particles with the sizes taught in Kambe et al.

(12) With respect to claim 9:

Kambe et al in column 9, line 51-52, teaches the properties of the particles. Kambe et al teaches a collection of preferred metal oxide particles, such as titanium dioxide, zinc dioxide or cerium dioxide particles.

(13) With respect to claim 10:

Kambe et al in column 9, line 51-52, teaches the properties of the particles. Kambe et al teaches a collection of preferred metal oxide particles, such as titanium dioxide, zinc dioxide or cerium dioxide particles.

(14) With respect to claim 12:

Kambe et al in column 11, lines 19-23, teaches a window that can be made from an inorganic glass such as a silicon based glass, an organic polymer such as high density polyethylene and polyesters. Examiner takes official notice that there are transparent polyethylene which can be used as epoxy and therefore the teachings in Kambe et al can be used to make a window that is transparent to visible light and by virtue of metal oxide particles taught in Kambe et l to be dispersed in the material, is opaque to UV light.

(15) With respect to claim 13:

Kambe et al in column 11, lines 19-23, teaches a window that can be made from an inorganic glass such as a silicon based glass. Therefore "matrix material comprising a group consisting of silicone, spin-on glasses, silicon compounds and polymers" reads on silicon based glass.

Response to Applicant's Arguments

(16) Applicants through their attorneys argue that the terms d_{50} and Q_0 are well known terms of art (page 5 or 7, Remarks, line 5) and as evidence site a document ISO 9276-2. Subsequently to expedite the prosecution applicants have amended the claims 6-8 to read "an average particle

diameter." In response, Examiner notes that first and foremost since the new claims listing does not contain any reference to the objected terms, the argument is moot in view of amended claims and second that the fact that a certain term is defined in a certain document in and out of itself does not constitute the grounds that the terms are well-known terms of art as Applicants contend.

(17) The rest of arguments made by the Applicants in their remarks of 03/04/2008 are considered but are moot in view of new grounds of rejection presented in this office action.

Nevertheless Applicants assert that they do not concede the Examiner's position regarding the merits of combining Chen and Kambe. Examiner wishes to make the following remarks of record. Chen taught or disclosed all limitations of the claim even the filter element for filtering out the unnecessary and harmful ultra violet rays, except the composition of the filter element material. The difference between the claimed invention and the prior art was therefore ascertained by this Examiner to be the composition of the filter element. Kambe et al disclosed using nano-particles as constituents of such filter element therefore Kambe et al disclosed taught and motivated using dispersed nano-particles for achieving the predictable result (in light of Kambe et al disclosure). It was ascertained that it was within the level of ordinary skill in the art to combine the two disclosures for the purpose of blocking the ultraviolet part of radiation. The combination then properly renders the claimed invention obvious. The rejection is therefore proper and has now been made final.

CONCLUSION

(18) Applicants' amendments have necessitated new grounds of rejection. Consequently this Office Action has been made FINAL.

(19) A shortened statutory period for reply to this Office Action is set to expire **THREE MONTH** from the mailing date of this Office Action. Applicant is reminded of the extension of time policy as set forth in 37 CFR § 1.136(a).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ardeshir Eftekharzadeh whose telephone number is (571) 270-3262. The

examiner can normally be reached on Monday-Thursday 10:30 AM-9:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Parker can be reached on (571) 272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://portal.uspto.gov/external/portal/pair. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. E./

Examiner, Art Unit 2815